Local Hazard Mitigation Plan ANNEX
City of Benicia, California

Introduction

The City of Benicia is a small-sized city in Solano County, California. The City has a population of 28,000 people, based on the 2004 California Department of Finance Estimate. The 2005-2007 adopted City's budget is $29 million, and it employs 215 full-time employees. City services include police, fire, and public works, water, wastewater, library, parks and community services.

The Planning Process

The City has a Community Health and Safety Element in its General Plan, last updated in 2003, that discusses fire, earthquake, flooding, and landslide hazards. The City also has an Emergency Operations Plan that was adopted by Council in April 2003. This Plan includes a detailed layout of the when the plan would be used as well as the duties and responsibilities for each of the City's Departments during any emergency. The Fire Department is currently updating this Plan and it should go to Council in the first quarter of 2007 for adoption. In addition, the City routinely enforces the requirements of the California Environmental Quality Act (CEQA) requirements (which, since 1988, have required mitigation for identified natural hazards). The City's effort has focused on building on these pre-existing programs and identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation.

Many of the activities conducted by the City were fed into the planning process for the multi-jurisdictional plan. The City participated in various ABAG workshops and meetings, including the general "kick-off" meeting. Finally, the City provided information on facilities that are viewed as "critical" to ABAG.

Key City staff spoke on many occasions to identify and prioritize mitigation strategies appropriate for the City. Departments involved in the meetings included the Planning Department, Building Official, Public Works, and Fire. During these meetings, staff reviewed the list of critical facilities and discussed priorities for the mitigation strategies. The mitigation strategies were reviewed for adoption by the City Council in a City Council meeting in February 2007. The public was allowed an opportunity to comment at that meeting. The City of Benicia's Annex and Strategies will become an implementation appendix to the City's Safety Element.

Approved by Benicia City Council Resolution # 07-18: February 20, 2007

Hazard and Risk Assessment

The ABAG multi-jurisdictional Local Hazard Mitigation Plan, to which this is an Annex, lists nine hazards that influence the Bay Area:

- Five related to earthquakes:
  - Faulting
  - Shaking
  - Earthquake-induced landslides
  - Liquefaction
  - Tsunamis
- Four related to weather:
  - Flooding
  - Landslides
  - Wildfires
  - Drought

These nine hazards also influence the City of Benicia and have been analyzed in this document.

While the City has undertaken a number of general hazard mapping activities since the first General Plan Health and Safety Element was prepared by the City, all of these maps are less detailed and are not as current as those shown on the ABAG website at **http://quake.abag.ca.gov/mitigation/**.

The City has had landslides in the area of Lake Herman Road. These landslides have affected roadways and transportation corridors. The City has undertaken geotechnical repairs of these slides and other mitigation efforts.

Information on disasters declared in Solano County is at **http://quake.abag.ca.gov/mitigation/disaster-history.html.**

The City examined the hazard exposure of City urban land based on the information on ABAG's website at **http://quake.abag.ca.gov/mitigation/pickdbh2.html**. Of the 5,347 urban acres in the City:

- **Earthquake faulting** – An active fault runs through southwestern Benicia, in the Cordelia/Green Valley area. **18 urban acres** are impacted by CGS Fault Zones

- **Earthquake shaking** – **1,306 urban** acres are in the highest two categories of shaking potential, in large part because of regional earthquake faults as well as the Green Valley Fault in southwestern Benicia.

- **Earthquake-induced landslides** – CGS has not completed mapping of earthquake-induced landslides in the Benicia area. Note that 250 acres of both urbanized and non-urban land in the City have existing landslides in the "Mostly a Landslide Area".

- **Earthquake liquefaction – 1,025** urban acres are in areas of moderate, high, or very high liquefaction susceptibility;

- **Tsunamis –** The mapping of the inundation area has not been completed at this time. However, Benicia does border the San Francisco Bay and Suisun Delta region and the potential impacts of tsunamis are likely. However, current research indicates that the run-up height would be minimal by the time the water made its way to Benicia.

- **Flooding** – **599** urban acres are in the 100-year flood plain, while an additional 38 urban acres are in other flood-prone areas;

- **Landslides – 41** urban acres are in areas defined as "mostly a landslide area" (existing landslides);

- **Wildfires – 421** urban acres are subject to high, very high, or extreme wildfire threat, with 3,669 urban acres in the wild land-urban interface threat area. This risk is exacerbated by the numerous hillsides lying north, east, and west of the City proper, along with many neighborhoods interfacing with such hillsides and open space areas.

- **Dam Inundation** – **484** urban acres are subject to dam inundation. This risk is relatively small, however, as the dams identified in this analysis are largely small water retention facilities (such as Lake Herman), which will have minimal life safety impacts in Benicia.

- **Drought – all 5,347 urban acres are subject to drought**. Benicia, like all California jurisdictions, faces potential impacts from longer-term periods of drought. The City owns its water utility and has secured adequate water supplies for all but the most severe drought situations.

The City also examined the hazard exposure of infrastructure based on the information on ABAG's website at **http://quake.abag.ca.gov/mitigation/pickdbh2.html**. Of the **157 miles** of roadway in the City,

- **Earthquake faulting –**There are no roadways or pipelines noted by ABAG in the CGS Study Zone.

- **Earthquake shaking** – **28 miles** of roadway are in the highest two categories of shaking potential.

- **Earthquake-induced landslides** – the California Geological Survey has not completed mapping of this hazard in the City of Benicia. Roads likely to be impacted by earthquake-induced landscapes, such as the area of Lake Herman Road and others in the "Southampton" area of Benicia.

- **Earthquake liquefaction – 17 miles** of roadway are in areas of moderate, high, or very high liquefaction susceptibility.

- **Tsunamis –** The mapping of the inundation area has not been completed at this time.

- **Flooding – 7 miles** of roadway are in the 100-year flood plain, while an additional 1 mile is in other flood-prone areas;

- **Landslides – One mile** of roads are in areas of existing landslides;

- **Wildfires – 2 miles** of roadway are subject to high, very high, or extreme wildfire threat and **115** miles of roads are in wildland-urban interface threat areas.

- **Dam Inundation – 11 miles** of roadway is in an area subject to dam inundation;

- **Drought – is not a hazard for roadways.**

Finally, the City examined the hazard exposure of critical health care facilities, schools, and city-owned buildings based on the information on ABAG's website at **http://quake.abag.ca.gov/mitigation/pickcrit.html**. Of the critical facilities in the City,

- **Earthquake faulting -** There are active fault zones in Benicia, but no critical facilities are within the CGS Earthquake Fault Study Zone.

- **Earthquake shaking - One** specialty clinic, **one** school, **17** City-owned buildings ("critical facilities"), and **3** bridges are in the highest two categories of shaking potential;

- **Earthquake-induced landslides – the California Geological Survey has not completed mapping of this hazard in the City of Benicia.**

- **Earthquake liquefaction – 7** City-owned critical facilities and **7** bridges and interchanges are in areas of moderate, high, or very high liquefaction susceptibility.

- **Tsunamis –**The mapping of the inundation area has not been completed at this time.

- **Flooding** – **One** specialty clinic, **9** schools, **39** critical facilities, and **32** bridges and interchanges are in either the 100-year flood plain or in other flood-prone areas;

- **Landslides –** There are no facilities within the "many" or "mostly" landslide areas.

- **Wildfires – 9** schools, **5** critical facilities, and **2** bridge/intersections are in an area of wildfire threat. However, **nine** schools, **25** critical facilities, and **20** bridges and intersections are located in wildland-urban interface threat areas.

- **Dam Inundation –One** school, **6** critical facilities, and **3** bridges and intersections are subject to dam inundation;

- **Drought –** Drought will not affect city buildings directly. However, the city does operate a water-supply distribution system.

There were no (zero) loss properties or claims in the City based on the information at **http://quake.abag.ca.gov/mitigation/pickflood.html**

The City plans to work with ABAG during 2007 to improve the risk assessment information being compiled by ABAG by providing information on unreinforced masonry buildings and soft-story apartments located in the City.

Comprehensive analysis of the City's water supply and forecasted demands is contained in its Urban Water Management Plan. The plan compares water supply and demand through buildout (2020) for various weather year types, including multiple drought years. The evaluation concluded that the City has adequate existing supply sources to meet future needs under all conditions, and does not need to obtain additional supply sources.

The City plans to work with ABAG to develop specific information about the kind and level of damage to buildings, infrastructure, and critical facilities that might result from any of the hazards previously noted.

As these impacts are not fully developed, the City has reviewed the hazards identified and ranked the hazards based on past disasters and expected future impacts. One conclusion is earthquakes (particularly shaking and liquefaction), flooding, wildfire, and landslides (including unstable earth) pose a moderately significant risk for potential loss.

Based on a 2006 report on climate change and sea level rise in the San Francisco Bay region from the San Francisco Bay Conservation and Development Commission (BCDC), there is a prediction of a sea level rise of up to one meter by the year 2100 from global warming. This is a future risk and hazard that will need assessment for hazards related to it along with mitigation activities.

Mitigation Activities and Priorities

As a participant in the ABAG multi-jurisdictional planning process, City of Benicia staff helped in the development and review of the comprehensive list of mitigation strategies in the overall multi-jurisdictional plan. At the meeting, all of the mitigation strategies were reviewed. The tentative decision on priority was made based on a variety of criteria, not simply on an economic cost-benefit analysis. These criteria include being technically and administratively feasible, politically acceptable, socially appropriate, legal, economically sound, and not harmful to the environment or our heritage.

Over time, we are committed to developing better hazard and risk information to use in making those trade-offs. We are not trying to create a disaster-proof region, but a disaster-resistant one.

The City of Benicia already implements many of the recommendations and programs identified during the regional process.

City staff reviewed these draft priorities. The final strategies (as shown in the attached Table) will become an *Implementation Appendix* to the City's *Safety Element*. Areas in the strategies area where the City has specific comments are in the Government and Infrastructure sections where project are rated "high." These include the City's Police and Dispatch facility and water systems. Both are under funded projects.

There is a substantial need for a new facility for the City of Benicia Police Department. The current building is vulnerable to natural disasters, particularly earthquakes, and was built using building and safety standards from 1941. Since that time significant progress has been made in the understanding of movements resulting from earthquakes. Modern construction techniques, standards and materials, provide significantly increased chances that structures will remain intact after a significant earthquake or other natural disaster.

Current interoperability among the city's emergency response system and neighboring emergency response systems is extremely limited. The emergency response system for the City of Benicia is fragmented with the 911 operations center housed at the current Police Department building and the emergency operations center housed at the current Fire Department building. There is currently no physical or technological linkage between the 911 operations center and the emergency operations center. Construction of new Police Department building would incorporate physical or technological linkages between the 911 and emergency operations centers. The development of a new Police Department building would also provide an opportunity to incorporate technological upgrades, which would provide linkages between the Police Department and the Solano County emergency response systems, the Contra Costa County emergency response systems and neighboring cities. Currently there is limited or no linkages between the Police Department and these entities. Creating these links would dramatically improve the interoperability of the areas emergency response systems. It is critical that Contra Costa County be included in the proposed linkages because the City of Benicia shares a border with the City of Martinez, which lies in Contra Costa County. The Martinez-Benicia Bridge a heavily used commuter route on Interstate 680 connects the two cities. The bridge spans the Carquinez Strait that has deep-water ports on both the Martinez and Benicia sides.

Construction of a new Police Department is currently an unfunded project. The projected costs of a new Police Department containing technological upgrades to improve the interoperability of the emergency response systems are approximately $15 million.

The City's water system is vulnerable to natural disasters such as earthquakes and any retrofitting and upgrading of the entire system is not funded.

The Plan Maintenance and Update Process

The City Manager's Office will ensure that ***monitoring*** of this Annex will occur. The plan will be monitored on an on-going basis. However, a major disaster affecting our community, any

legal changes, notices from ABAG, as the lead agency in this process and other related triggers would be used to modify this plan. Finally, the Annex will be a discussion item on the agenda of the meeting of City Department Heads at least once a year in April. At that meeting, the department heads will focus on ***evaluating*** the Annex in light of technological and political changes during the past year or other significant events. This group will be responsible for determining if the plan should be updated.

The City of Benicia is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000. The City's Fire Department, in coordination with other City Departments will contact ABAG four years after this plan is approved to ensure that ABAG plans to undertake the update process. If so, the City again plans to participate in the multi-jurisdictional plan. If ABAG is unwilling or unable to act as the lead agency in the multi-jurisdictional effort, other agencies will be contacted, including the County's Office of Emergency Services. Solano County and the Cities within the county should then work together to identify another regional forum for developing a multi-jurisdictional plan.

The ***public*** will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Before adoption of updates, the City will provide the opportunity for the public to comment on the updates. A public notice will be posted before the meeting to announce the comment period and meeting logistics.